RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical
Information Center (STIC) no errors detected.

Application Serial Number: _____10/807, 755A_____

Source: _____JFWO_____

Date Processed by STIC: _____11/09/2006_____

ENTERED

RAW SEQUENCE LISTING   DATE: 11/09/2006
PATENT APPLICATION: **US/10/807,755A**   TIME: 09:09:26

     Input Set : **A:\PTO.RJ.txt**
     Output Set: **N:\CRF4\11092006\J807755A.raw**

```
 4 <110> APPLICANT: Robbins, Paul D.
 5        Mai, Jeffrey C.
 7 <120> TITLE OF INVENTION: A COMPACT SYNTHETIC EXPRESSION VECTOR COMPRISING DOUBLE-
STRANDED DNA
 8        MOLECULES AND METHODS OF USE THEREOF
10 <130> FILE REFERENCE: AP35518 (072396.0263)
12 <140> CURRENT APPLICATION NUMBER: 10/807,755A
13 <141> CURRENT FILING DATE: 2004-03-24
15 <150> PRIOR APPLICATION NUMBER: 60/456,989
16 <151> PRIOR FILING DATE: 2003-03-24
18 <160> NUMBER OF SEQ ID NOS: 52
20 <170> SOFTWARE: FastSEQ for Windows Version 4.0
22 <210> SEQ ID NO: 1
23 <211> LENGTH: 51
24 <212> TYPE: DNA
25 <213> ORGANISM: Artificial Sequence
27 <220> FEATURE:
28 <223> OTHER INFORMATION: synthetic oligonucleotide
30 <400> SEQUENCE: 1
31 gcaagcugac ccugaaguuc uucaagagag aacuucaggg ucagcuugcu u          51
33 <210> SEQ ID NO: 2
34 <211> LENGTH: 22
35 <212> TYPE: DNA
36 <213> ORGANISM: Artificial Sequence
38 <220> FEATURE:
39 <223> OTHER INFORMATION: synthetic oligonucleotide
41 <400> SEQUENCE: 2
42 gcaagcugac ccugaaguuc uu                                          22
44 <210> SEQ ID NO: 3
45 <211> LENGTH: 22
46 <212> TYPE: DNA
47 <213> ORGANISM: Artificial Sequence
49 <220> FEATURE:
50 <223> OTHER INFORMATION: synthetic oligonucleotide
52 <400> SEQUENCE: 3
53 gaacuucagg gucagcuugc uu                                          22
55 <210> SEQ ID NO: 4
56 <211> LENGTH: 156
57 <212> TYPE: DNA
58 <213> ORGANISM: Artificial Sequence
60 <220> FEATURE:
61 <223> OTHER INFORMATION: synthetic oligonucleotide
63 <400> SEQUENCE: 4
64 aatatttgca tgtcgctatg tgttctggga aatcaccata aacgtgaaat gtctttggat 60
```

$C p \gamma - 617)$

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```
65 ttgggaatct tataagttct gtatgagacc acagatcccc gcaagctgac cctgaagttc 120
66 ttcaagagag aacttcaggg tcagcttgct ttttgg                           156
68 <210> SEQ ID NO: 5
69 <211> LENGTH: 12
70 <212> TYPE: DNA
71 <213> ORGANISM: Artificial Sequence
73 <220> FEATURE:
74 <223> OTHER INFORMATION: synthetic oligonucleotide
76 <400> SEQUENCE: 5
77 gtggcgcagc gg                                                       12
79 <210> SEQ ID NO: 6
80 <211> LENGTH: 11
81 <212> TYPE: DNA
82 <213> ORGANISM: Artificial Sequence
84 <220> FEATURE:
85 <223> OTHER INFORMATION: synthetic oligonucleotide
87 <400> SEQUENCE: 6
88 ggatcgaaac c                                                        11
90 <210> SEQ ID NO: 7
91 <211> LENGTH: 28
92 <212> TYPE: DNA
93 <213> ORGANISM: Artificial Sequence
95 <220> FEATURE:
96 <223> OTHER INFORMATION: synthetic oligonucleotide
98 <400> SEQUENCE: 7
99 ttttttttata tatacaggag gccgaggc                                     28
101 <210> SEQ ID NO: 8
102 <211> LENGTH: 16
103 <212> TYPE: PRT
104 <213> ORGANISM: Artificial Sequence
106 <220> FEATURE:
107 <223> OTHER INFORMATION: synthetic polypeptide
109 <400> SEQUENCE: 8
110 Cys Gly Ser Asp Ala Leu Asp Asp Phe Asp Leu Asp Met Leu Gly Ser
111  1               5           10                  15
114 <210> SEQ ID NO: 9
115 <211> LENGTH: 29
116 <212> TYPE: PRT
117 <213> ORGANISM: Artificial Sequence
119 <220> FEATURE:
120 <223> OTHER INFORMATION: synthetic polypeptide
122 <400> SEQUENCE: 9
123 Cys Gly Ser Asp Ala Leu Asp Asp Phe Asp Leu Asp Met Leu Gly Ser
124  1               5           10                  15
125 Asp Ala Leu Asp Asp Phe Asp Leu Asp Met Leu Gly Ser
126             20              25
129 <210> SEQ ID NO: 10
130 <211> LENGTH: 15
131 <212> TYPE: DNA
```

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132 <213> ORGANISM: Artificial Sequence
134 <220> FEATURE:
135 <223> OTHER INFORMATION: synthetic oligonucleotide
137 <400> SEQUENCE: 10
138 aggtcagcat gacct   15
140 <210> SEQ ID NO: 11
141 <211> LENGTH: 15
142 <212> TYPE: DNA
143 <213> ORGANISM: Artificial Sequence
145 <220> FEATURE:
146 <223> OTHER INFORMATION: synthetic oligonucleotide
148 <400> SEQUENCE: 11
149 aggtcatatt gacct   15
151 <210> SEQ ID NO: 12
152 <211> LENGTH: 20
153 <212> TYPE: DNA
154 <213> ORGANISM: Artificial Sequence
156 <220> FEATURE:
157 <223> OTHER INFORMATION: synthetic oligonucleotide
159 <400> SEQUENCE: 12
160 gtgcttgctt tggtagcaca   20
162 <210> SEQ ID NO: 13
163 <211> LENGTH: 14
164 <212> TYPE: DNA
165 <213> ORGANISM: Artificial Sequence
167 <220> FEATURE:
168 <223> OTHER INFORMATION: synthetic oligonucleotide
170 <400> SEQUENCE: 13
171 aagattagca cagt   14
173 <210> SEQ ID NO: 14
174 <211> LENGTH: 62
175 <212> TYPE: DNA
176 <213> ORGANISM: Artificial Sequence
178 <220> FEATURE:
179 <223> OTHER INFORMATION: synthetic oligonucleotide
181 <400> SEQUENCE: 14
182 gaatcttata agttctgtat gagaccacag atccccgtgc ttgctttggt agcacaagca 60
183 tt   62
185 <210> SEQ ID NO: 15
186 <211> LENGTH: 59
187 <212> TYPE: DNA
188 <213> ORGANISM: Artificial Sequence
190 <220> FEATURE:
191 <223> OTHER INFORMATION: synthetic oligonucleotide
193 <400> SEQUENCE: 15
194 tttttcgata acatcttcga ccacctgaca cgattagaag gtggtcggag atgttgtcg 59
196 <210> SEQ ID NO: 16
197 <211> LENGTH: 82
198 <212> TYPE: DNA

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```
199 <213> ORGANISM: Artificial Sequence
201 <220> FEATURE:
202 <223> OTHER INFORMATION: synthetic oligonucleotide
204 <400> SEQUENCE: 16
205 gugcuugcuu ugguagcaca agcauugcug uuguagaggc ugguggaaga uuagcacagu 60
206 ccaccagcuu cuacaauagc uu                                           82
208 <210> SEQ ID NO: 17
209 <211> LENGTH: 22
210 <212> TYPE: DNA
211 <213> ORGANISM: Artificial Sequence
213 <220> FEATURE:
214 <223> OTHER INFORMATION: synthetic oligonucleotide
216 <400> SEQUENCE: 17
217 gcuguuguag aggcuggugg aa                                           22
219 <210> SEQ ID NO: 18
220 <211> LENGTH: 22
221 <212> TYPE: DNA
222 <213> ORGANISM: Artificial Sequence
224 <220> FEATURE:
225 <223> OTHER INFORMATION: synthetic oligonucleotide
227 <400> SEQUENCE: 18
228 ccaccagcuu cuacaauagc uu                                           22
230 <210> SEQ ID NO: 19
231 <211> LENGTH: 36
232 <212> TYPE: DNA
233 <213> ORGANISM: Artificial Sequence
235 <220> FEATURE:
236 <223> OTHER INFORMATION: synthetic oligonucleotide
238 <400> SEQUENCE: 19
239 cctcaaatgg tctccaattt tcctttggca aattcc                            36
241 <210> SEQ ID NO: 20
242 <211> LENGTH: 100
243 <212> TYPE: DNA
244 <213> ORGANISM: Artificial Sequence
246 <220> FEATURE:
247 <223> OTHER INFORMATION: synthetic oligonucleotide
249 <400> SEQUENCE: 20
250 aatatttgca tgtcgctatg tgttctggga aatcaccata aacgtgaaat gtctttggat 60
251 ttgggaatct tataagttct gtatgagacc acagatcccc                       100
253 <210> SEQ ID NO: 21
254 <211> LENGTH: 100
255 <212> TYPE: DNA
256 <213> ORGANISM: Artificial Sequence
258 <220> FEATURE:
259 <223> OTHER INFORMATION: synthetic oligonucleotide
261 <400> SEQUENCE: 21
262 aatatttgca tgtcgctatg tgttctggga aatcaccata aacgtgaaat gtctttggat 60
263 ttgggaatct tataagttct gtatgagacc actctttccc                       100
265 <210> SEQ ID NO: 22
```

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Input Set : **A:\PTO.RJ.txt**
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```
266 <211> LENGTH: 68
267 <212> TYPE: DNA
268 <213> ORGANISM: Artificial Sequence
270 <220> FEATURE:
271 <223> OTHER INFORMATION: synthetic oligonucleotide
273 <400> SEQUENCE: 22
274 tcaccataaa cgtgaaatgt ctttggattt gggaatctta taagttctgt atgagaccac 60
275 tctttccc                                                          68
277 <210> SEQ ID NO: 23
278 <211> LENGTH: 135
279 <212> TYPE: DNA
280 <213> ORGANISM: Artificial Sequence
282 <220> FEATURE:
283 <221> NAME/KEY: misc_feature
284 <222> LOCATION: (71)...(89)
285 <223> OTHER INFORMATION: n = A,T,C or G
287 <221> NAME/KEY: misc_feature
288 <222> LOCATION: (93)...(111)
289 <223> OTHER INFORMATION: n = A,T,C or G
291 <223> OTHER INFORMATION: synthetic oligonucleotide
```
W--> `293 <400> 23`
```
294 caggactagt cttttaggtc aaaaagaaga agctttgtaa ccgttggaaa acgtagtgta 60
```
W--> `295 gtggttacac nnnnnnnnnn nnnnnnnnna tgnnnnnnnn nnnnnnnnnn nttcggttcg 120`
```
296 aaaccgggcg ttttt                                                  135
298 <210> SEQ ID NO: 24
299 <211> LENGTH: 190
300 <212> TYPE: DNA
301 <213> ORGANISM: Artificial Sequence
303 <220> FEATURE:
304 <221> NAME/KEY: misc_feature
305 <222> LOCATION: (75)...(93)
306 <223> OTHER INFORMATION: n = A,T,C or G
308 <221> NAME/KEY: misc_feature
309 <222> LOCATION: (97)...(115)
310 <223> OTHER INFORMATION: n = A,T,C or G
312 <223> OTHER INFORMATION: synthetic oligonucleotide
```
W--> `314 <400> 24`
```
315 aattcaggac tagtctttta ggtcaaaaag aagaagcttt gtaaccgttg gaaaacgtag 60
```
W--> `316 tgtagtggtt acacnnnnnn nnnnnnnnnn nnnatgnnnn nnnnnnnnnn nnnnnttcgg 120`
```
317 ttcgaaaccg ggcgtttttta aagagagtcg cttttttttc tatcgctaat tctgtttttg 180
318 agtattttca                                                        190
320 <210> SEQ ID NO: 25
321 <211> LENGTH: 135
322 <212> TYPE: DNA
323 <213> ORGANISM: Artificial Sequence
325 <220> FEATURE:
326 <221> NAME/KEY: misc_feature
327 <222> LOCATION: (71)...(89)
328 <223> OTHER INFORMATION: n = A,T,C or G
```

RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 11/09/2006
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Input Set : **A:\PTO.RJ.txt**
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Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:23; N Pos. 71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,93
Seq#:23; N Pos. 94,95,96,97,98,99,100,101,102,103,104,105,106,107,108,109
Seq#:23; N Pos. 110,111
Seq#:24; N Pos. 75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,97
Seq#:24; N Pos. 98,99,100,101,102,103,104,105,106,107,108,109,110,111,112
Seq#:24; N Pos. 113,114,115
Seq#:25; N Pos. 71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89
Seq#:25; N Pos. 101,102,103,104,105,106,107,108,109,110,111,112,113,114,115
Seq#:25; N Pos. 116,117,118,119
Seq#:26; N Pos. 71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89
Seq#:26; N Pos. 101,102,103,104,105,106,107,108,109,110,111,112,113,114,115
Seq#:26; N Pos. 116,117,118,119
Seq#:27; N Pos. 66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,95
Seq#:27; N Pos. 96,97,98,99,100,101,102,103,104,105,106,107,108,109,110,111
Seq#:27; N Pos. 112,113
Seq#:28; N Pos. 70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,99
Seq#:28; N Pos. 100,101,102,103,104,105,106,107,108,109,110,111,112,113,114
Seq#:28; N Pos. 115,116,117
Seq#:29; N Pos. 79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97
Seq#:29; N Pos. 112,113,114,115,116,117,118,119,120,121,122,123,124,125,126
Seq#:29; N Pos. 127,128,129,130
Seq#:30; N Pos. 94,95,96,97,98,99,100,101,102,103,104,105,106,107,108,109
Seq#:30; N Pos. 110,111,112,127,128,129,130,131,132,133,134,135,136,137,138
Seq#:30; N Pos. 139,140,141,142,143,144,145
Seq#:31; N Pos. 86,87,88,89,90,91,92,93,94,95,96,97,98,99,100,101,102,103
Seq#:31; N Pos. 104,115,116,117,118,119,120,121,122,123,124,125,126,127,128
Seq#:31; N Pos. 129,130,131,132,133
Seq#:32; N Pos. 106,107,108,109,110,111,112,113,114,115,116,117,118,119,120
Seq#:32; N Pos. 121,122,123,124,135,136,137,138,139,140,141,142,143,144,145
Seq#:32; N Pos. 146,147,148,149,150,151,152,153
Seq#:33; N Pos. 83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100,101
Seq#:33; N Pos. 112,113,114,115,116,117,118,119,120,121,122,123,124,125,126
Seq#:33; N Pos. 127,128,129,130
Seq#:34; N Pos. 101,102,103,104,105,106,107,108,109,110,111,112,113,114,115
Seq#:34; N Pos. 116,117,118,119,130,131,132,133,134,135,136,137,138,139,140
Seq#:34; N Pos. 141,142,143,144,145,146,147,148
Seq#:47; N Pos. 106,107,108,109,110,111,112,113,114,115,116,117,118,119,120
Seq#:47; N Pos. 121,122,123,124,135,136,137,138,139,140,141,142,143,144,145
Seq#:47; N Pos. 146,147,148,149,150,151,152,153
Seq#:48; N Pos. 298,299,300,301,302,303,304,305,306,307,308,309,310,311,312
Seq#:48; N Pos. 313,314,315,316,327,328,329,330,331,332,333,334,335,336,337
Seq#:48; N Pos. 338,339,340,341,342,343,344,345
Seq#:49; N Pos. 101,102,103,104,105,106,107,108,109,110,111,112,113,114,115
Seq#:49; N Pos. 116,117,118,119,130,131,132,133,134,135,136,137,138,139,140

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Seq#:49; N Pos. 141,142,143,144,145,146,147,148
Seq#:50; N Pos. 98,99,100,101,102,103,104,105,106,107,108,109,110,111,112
Seq#:50; N Pos. 113,114,115,116
Seq#:51; N Pos. 21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,51
Seq#:51; N Pos. 52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69
Seq#:52; N Pos. 27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,60
Seq#:52; N Pos. 61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78

VERIFICATION SUMMARY   DATE: 11/09/2006
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Input Set : **A:\PTO.RJ.txt**
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```
L:293 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:23
L:295 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:23 after pos.:60
L:314 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:24
L:316 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:24 after pos.:60
L:336 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:25
L:338 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:25 after pos.:60
L:357 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:26
L:359 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:26 after pos.:60
L:378 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:27
L:380 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:60
L:399 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:28
L:401 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28 after pos.:60
L:421 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:29
L:423 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29 after pos.:60
M:341 Repeated in SeqNo=29
L:442 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:30
L:444 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30 after pos.:60
M:341 Repeated in SeqNo=30
L:463 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:31
L:465 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31 after pos.:60
M:341 Repeated in SeqNo=31
L:484 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:32
L:486 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:32 after pos.:60
M:341 Repeated in SeqNo=32
L:505 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:33
L:507 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:33 after pos.:60
M:341 Repeated in SeqNo=33
L:526 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:34
L:528 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34 after pos.:60
M:341 Repeated in SeqNo=34
L:685 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:47
L:687 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:47 after pos.:60
M:341 Repeated in SeqNo=47
L:706 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:48
L:711 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:48 after pos.:240
M:341 Repeated in SeqNo=48
L:730 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:49
L:732 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:49 after pos.:60
M:341 Repeated in SeqNo=49
L:747 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:50
L:749 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:50 after pos.:60
L:766 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:51
L:767 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:51 after pos.:0
M:341 Repeated in SeqNo=51
L:784 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:52
L:785 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:52 after pos.:0
M:341 Repeated in SeqNo=52
```